

~~B1~~
~~B2~~
taking over the pulp sheet onto the core shaft of the horizontal reel until the horizontal reel is pulled away from the reel drum.

~~B1~~
~~B2~~
3. Process according to Claim 1 further comprising the step of controlling the pressure force with a pressure cylinder.

~~B1~~
~~B2~~
5. Apparatus for continuously reeling a pulp sheet, comprising:
a horizontal reel adapted for having the pulp sheet wound thereon;
a reel drum adapted for pressing the pulp sheet onto the horizontal reel; and
a primary arm including a load sensing device, a plurality of roller bearings, and
a hydraulic cylinder supported on the roller bearings, the load-sensing device being
integrated into the hydraulic cylinder, and the horizontal reel and the pulp sheet wound
thereon being supported on the load sensing device.

~~B1~~
~~B2~~
8. Apparatus according to Claim 5 further comprising a secondary arm including
a horizontally adjustable holding device having a load sensing device, the horizontal
reel being supported on the load-sensing device of the horizontally adjustable holding
device.

Please delete claims 2, 6 and 7.

REMARKS

Upon entry of this amendment, independent claim 1 with dependent claims 3 and 4 and independent claim 5 with dependent claim 8 will be present in the application.

Claim 1 has been amended to recite that the value of the pressure force in the nip is measured "directly whereby frictional losses associated with other process components are eliminated". As stated in the Background of the Invention, one of the principal disadvantages of the conventional devices is that "the pressing force cannot be set exactly because there are too many points where non-calculable losses arise,

e.g. due to friction." As disclosed on page 2, lines 20-25, in the subject invention the horizontal reel in the primary arm is supported on load-sensing devices. "As a result, it is possible to measure the contact pressure directly and without any losses". Claim 1 has also been amended to include the limitation of claim 2 and further to recite that the pressure force in the nip is controlled at the desired level during the entire winding process "from the moment of taking over the pulp sheet onto the core shaft of the horizontal reel until the horizontal reel is pulled away from the reel drum." This is disclosed on page 1, line 30, to page 2, line 6, and page 6, lines 7-9. Claim 5 was amended to include the limitations of claims 6 and 7. Claim 8 was amended to provide proper antecedent basis for the elements recited in the claim. Applicants respectfully submit that none of the claim amendments introduces new matter.

Claims 1-4 and 8 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 has been amended to recite that the value of the pressure force in the nip is measured "directly whereby frictional losses associated with other process components are eliminated". Claim 8 has been amended to recite that the apparatus further comprises a secondary arm including a horizontally adjustable holding device having a load sensing device, where the horizontal reel is supported on the load-sensing device of the horizontally adjustable holding device. Applicants respectfully submit that such amendment cures the indefiniteness noted in the Office Action.

Claims 1-4 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 5,845,868 (Klerelid), the Office Action alleging that the Klerelid reference discloses a process where the pressure force in the nip is measured without any losses of force.

As discussed in the Background of the Invention section of the subject specification:

The disadvantage of the devices known is that either the contact pressure of the horizontal reel on the reel drum is such that the horizontal reel is driven by the force generated by friction [as shown by Klerelid], or a separate drive is provided for the horizontal reel, where the pressing force cannot be set exactly because there are too many points where

non-calculable losses arise, e.g. due to friction. The pressure pre-set at the contact pressure cylinders thus does not define the actual pressing force between reel drum and horizontal reel.

More precisely, with the pressing force being determined by the deflection of the outer shell of the reel drum and with the pressure force being exerted by the parent roll (Col. 6, lines 21-27), the Klerelid device cannot measure the actual pressing force between the reel drum and the horizontal reel. Since the parent roll consists of the reel spool 26 plus the paper on the reel spool (Col. 5, lines 28-29), the pressing force exerted on the reel drum is a combination of the pressing force exerted by the reel spool plus the weight of the paper on the reel spool. The apparatus of the Klerelid reference does not and cannot measure the pressure force exerted only by the horizontal reel. Therefore, the apparatus of the Klerelid reference cannot measure such pressure force without losses. In addition, claim 1 now recites that the pressure force in the nip is controlled at the desired level during the entire winding process "from the moment of taking over the pulp sheet onto the core shaft of the horizontal reel until the horizontal reel is pulled away from the reel drum." The Klerelid reference does not teach or suggest such apparatus or method. Accordingly, the rejection of claim 1 must be withdrawn.

Claims 5-8 were rejected under 35 U.S.C. § 103 as being unpatentable over the Klerelid reference, the Office Action contending that Klerelid discloses "a reel drum 19 adapted for pressing the paper sheet onto the horizontal reel 26; and a primary arm 28 including a load sensing device 45 located in a reel drum 19, the horizontal reel and the paper wound thereon being supported on the load sensing device as shown in Figs. 1-3." However, such allegation is logically impossible. If the load sensing device is located in reel drum 19 and reel drum 19 is adapted for pressing the paper sheet onto the horizontal reel 26, the horizontal reel and paper wound thereon cannot be supported on the load sensing device. Further, Klerelid teaches that reel spools 26 are on the same horizontal plane as reel drum 19 (Figure 1, Col. 5, lines 37-39) and therefore could not possibly be supported on the reel drum or any component of the reel drum.

Klerelid teaches that “[t]he reel spool 26 is supported by a pair of carriages 37, one of which is illustrated in FIG. 3.” (Col. 5, lines 46-47) As shown in Figure 2, load sensing device 45 senses the load on axle 32 of reel drum 19. Accordingly, it cannot possibly be argued that Klerelid’s load sensing device 45 supports any part of parent roll 25. Nor can it logically be argued that load sensing device supports any part of reel drum 19. As shown in Figure 2, the end of axle 32 is surrounded by an enclosure (which is supported on a pedestal) with a bearing disposed between axle 32 and the enclosure. Load sensing device 45 is shown as being disposed above the outer surface of the enclosure. Clearly, the pedestal, enclosure and bearing support axle 32 (which in turn supports the remaining components of reel drum 19), not load sensing device 45. Assuming that gravity operates on reel drum 19, a load sensing device 45 which is disposed above axle 32 cannot possibly support axle 32 or any portion of reel drum 19.

The Office Action alleges that the arms 28 of the Klerelid reference are equivalent to the primary arm of the subject application. Klerelid teaches that “[w]hen the parent roll 25 has reached its final predetermined diameter, the new reel spool 26 is lowered by a pair of arms 28 into position against the rotatable reel drum 19. ... The reel spool 26 is supported by a pair of carriages 37, one of which is illustrated in FIG. 3. As the parent roll 25 builds, the reel spool 26 moves away from the reel drum 19.” (Col. 5, lines 34-48) As taught by Klerelid, the reel spool is not supported on (or even in contact with) the arms 28 during the winding operation. Since claim 5 recites that “the horizontal reel and the pulp sheet wound thereon” are supported on the load sensing device and further recites that the load sensing device is a part of the primary arm, Klerelid’s arms 28 cannot be equivalent to the primary arm since it does not support a reel spool having a pulp sheet wound thereon. Further, Klerelid clearly teaches that hydraulic servo positioning control system 44 positions the carriages 37 which hold the reel spool 26 and parent roll (Col. 7, lines 29-43) and that the signal from load sensors 45 is received by controller 43 to operate control system 44 (Col. 8, lines 27-32). Hydraulic servo positioning control system 44 does not include a

hydraulic cylinder supported on a plurality of roller bearings, as now recited in claim 5.

For all of the above reasons, the rejection of claim 5 must be withdrawn.

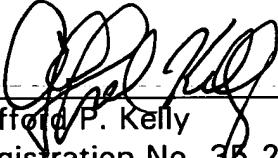
The various dependent claims add additional features to the independent claims, and are therefore believed to be allowable. Also, the dependent claims are believed patentably distinct on their own merits as being directed to combinations not suggested by the references.

In view of the above-directed amendments and the proceeding remarks, prompt and favorable reconsideration is respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Claims 1, 3, 5 and 8 have been amended as follows:

1. Process for continuous reeling of a pulp sheet, comprising the steps of:
running the pulp sheet over a reel drum;
winding the pulp sheet on a horizontal reel;
pressing the pulp sheet in the nip between the horizontal reel and the reel drum;
[and]
~~measuring the value of the pressure force in the nip [without any] directly whereby frictional losses associated with other process components are eliminated;~~
and
~~controlling the pressure force in the nip at a desired level, using the measured value of the pressure force, during the entire winding process from the moment of taking over the pulp sheet onto the core shaft of the horizontal reel until the horizontal reel is pulled away from the reel drum.~~
3. Process according to Claim [2] 1 further comprising the step of controlling the pressure force with a pressure cylinder.
5. Apparatus for continuously reeling a pulp sheet, comprising:
a horizontal reel adapted for having the pulp sheet wound thereon;
a reel drum adapted for pressing the pulp sheet onto the horizontal reel; and
a primary arm including a load sensing device, a plurality of roller bearings, and a hydraulic cylinder supported on the roller bearings, the load-sensing device being integrated into the hydraulic cylinder, and the horizontal reel and the pulp sheet wound thereon being supported on the load sensing device. → 16?

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8. Apparatus according to Claim 5 [wherein the] further comprising a secondary arm [also includes] including a horizontally adjustable holding device ¹⁶having a load sensing device, the horizontal reel being supported on the load-sensing [devices in] device of the horizontally adjustable holding device.